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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,254	03/18/2004	Guy V. Clatterbaugh	1921-2645	5982

54110 7590 05/27/2008

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EXAMINER	
CHAO, ELMER M	

ART UNIT	PAPER NUMBER
3737	

MAIL DATE	DELIVERY MODE
05/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,254	CLATTERBAUGH ET AL.	
	Examiner	Art Unit	
	ELMER CHAO	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/28/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,11-14,28,29,31-35 and 38-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,11-14,28,29,31-35, and 38-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Acknowledgement is made of the amendment filed 12/28/2007.

Drawings

2. The drawings were received on 12/28/2007. These drawings are acceptable.

Response to Arguments

Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 4, 5, 7, 28, 31, 32, and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabek et al. (U.S. 2004/0111022 A1) in view of Reynolds et al. (U.S. 2003/0069521), further in view of Bradley et al. (U.S. 5,050,607).

Grabek et al. teach a radio frequency coil adapted to be extended from a catheter (Para [0009]), said coil comprising a flexible printed wiring board comprising: a first end of said flexible printed wiring board (Fig. 9, Item 14) extending from an opening in said catheter (Fig. 9, bottom half of loop); a second

end of said flexible printed wiring board extending from said opening in said catheter (Fig. 9, top half of loop); a connection external to said catheter joining said first end to said second end to form a loop (Fig. 9, the connection point between the top and bottom half of the loop); said coil further comprising insulator sections on said flexible printed wiring board, wherein said insulator sections define the shape of said loop (Para [0032]); and said coil further comprising control rods connected to said first end and said second end, wherein said control rods are independently moveable (Fig. 9, lower and upper arrows).

Grabek et al. teach the limitations as discussed above but fail to explicitly teach the relative flexibility of the first and second ends. However, Reynolds et al. teach coils formed of round or flat ribbon in order to achieve a desired flexibility (Para [0071]). Furthermore, Grabek et al. teach that the flexibility of the coil would allow the coil to form when pushed out of the opening of the catheter (Figs. 8 & 9). Therefore it would have been obvious to a person of ordinary skill in the art to modify Grabek et al.'s invention to include using a first end more flexible than the second end as it is functionally equivalent to Grabek et al.'s invention of creating an arc to form a loop.

Grabek et al. teach the limitations as discussed above but do not explicitly teach the flexible printed circuit board having a first end more flexible than the second end. However, in the same field of endeavor, Bradley et al. teach the use of a retractable coil using the flexibility of two materials to form a coil at the tip of a surgical device (Fig. 2). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Grabek et

al. to teach a first end more flexible than a second end in order to place the RF coil as close as possible to the site of imaging to obtain high resolution MRI images (see abstract).

5. **Claims 2 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabek et al. (U.S. 2004/0111022 A1) in view of Reynolds et al., further in view of Bradley et al., further in view of Nesteruk et al. (U.S. 6,950,063). Grabek et al., Reynolds et al., and Bradley et al. teach the limitations as discussed above but fail to explicitly teach the flexible printed wiring board having a flat ribbon shape. However, Nesteruk et al. teach a MRI probe with a conductor that is flat in shape (col. 3, lines 18-37). Therefore it would have been obvious to a person of ordinary skill in the art to modify Grabek et al. in view of Reynolds et al., further in view of Bradley et al. to include a flat ribbon shaped loop as a matter of design choice as flat conductors are well-known in the art as one of a number of possible shapes for intraluminal probes (col. 3, lines 18-30). Furthermore, Reynolds et al. teach coils formed of round or flat ribbon in order to achieve a desired flexibility (Para [0071]).

6. **Claims 6 and 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabek et al. in view of Reynolds et al., further in view of Bradley et al., further in view of Watkins et al. (U.S. 6,175,757). Grabek et al., Reynolds et al., and Bradley et al. teach the limitations as discussed above but fail to explicitly teach the flexible printed wiring board including capacitors adjacent said second end. However, Watkins et al. teach adding capacitors to a receive coil (col. 5, lines 16-21). Therefore, it would have been obvious to a

person of ordinary skill in the art to modify Grabek et al. in view of Reynolds et al., further in view of Bradley et al. to include capacitors adjacent said second end in order to provide a more sensitive receptor to MR signals (col. 5, lines 16-21).

7. **Claims 8, 11-14, 35, and 38-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabek et al. in view of Reynolds et al., further in view of Bradley et al., further in view of Nesteruk et al., further in view of Watkins et al., further in view of Atalar et al. (U.S. 5,699,801). Grabek et al., Reynolds et al., Bradley et al., Nesteruk et al., and Watkins et al. teach the limitations as discussed above but fail to explicitly teach a Faraday shield on the flexible printed wiring board. However, in the same field of endeavor, Atalar et al. teach a catheter receiver coil with a faraday shield (col. 16, lines 1-3). Therefore, it would have been obvious to a person of ordinary skill in the art to include using a Faraday shield on said flexible printed wiring board in order to enhance efficiency (col. 15, lines 66-67).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmer Chao whose telephone number is (571)272-0674. The examiner can normally be reached on 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/
Supervisory Patent Examiner, Art Unit 3737

/E. C./
Examiner, Art Unit 3737
5/19/2008